A. AMENDMENTS TO CLAIMS

Please cancel Claims 1, 2, 3, 5, 14, 15, 17, 26, 27, 29 and 39-41, and amend the claims as indicated hereinafter.

1. (CANCELED).

2. (CANCELED).

3. (CANCELED).

4. (CURRENTLY AMENDED) A method for processing data received from a communications channel comprising the computer-implemented steps of:

receiving, from the communications channel, received data that is based upon both modulated data and distortion introduced by the communications channel, wherein the modulated data is the result of original data modulated onto one or more carriers;

equalizing the received data using an equalizer to generate equalized data, wherein the equalizer uses an algorithm with a set of one or more coefficients selected to account for a frequency domain response of the equalizer and to reduce the distortion introduced by the communications channel; and

recovering an estimate of the original data by demodulating the equalized data.

~~The method as recited in Claim 2, wherein the set of one or more coefficients is further selected to reduce the distortion introduced by the communications channel.~~

5. (CANCELED).

6. (CURRENTLY AMENDED) A method for processing data received from a communications channel comprising the computer-implemented steps of:

receiving, from the communications channel, received data that is based upon both modulated data and distortion introduced by the communications channel, wherein the modulated data is the result of original data modulated onto one or more carriers using a cyclic prefix;

equalizing the received data using an equalizer to generate equalized data, wherein the equalizer uses finite precision arithmetic to implement an algorithm with a set of one or more coefficients selected to account for a frequency domain response of the equalizer and to compensate for round off errors attributable to the use of the finite precision arithmetic in the equalizer; and

recovering an estimate of the original data by demodulating the equalized data.

~~The method as recited in Claim 2, wherein finite precision arithmetic is employed in the equalizer to implement the algorithm and the set of one or more coefficients is selected to compensate for round off errors attributable to the use of the finite precision arithmetic in the equalizer.~~

7. (PREVIOUSLY PRESENTED) The method as recited in Claim 6, wherein the set of one or more coefficients is determined based upon modeling noise attributable to the round off errors as a white noise source at an output of the equalizer.

8. (CURRENTLY AMENDED) A method for processing data received from a communications channel comprising the computer-implemented steps of:

receiving, from the communications channel, received data that is based upon both modulated data and distortion introduced by the communications channel, wherein the modulated data is the result of original data modulated onto one or more carriers using a cyclic prefix;

equalizing the received data using an equalizer to generate equalized data, wherein the equalizer uses finite precision arithmetic to implement an algorithm with a set of one or more coefficients selected to account for a frequency domain

response of the equalizer and to compensate for round off errors attributable to the use of the finite precision arithmetic to demodulate the equalized data; and recovering an estimate of the original data by demodulating the equalized data.

~~The method as recited in Claim 2, wherein the step of demodulating the equalized data includes the use of finite precision arithmetic and the set of one or more coefficients is selected to compensate for round off errors attributable to the use of the finite precision arithmetic to demodulate the equalized data.~~

9. (PREVIOUSLY PRESENTED) The method as recited in Claim 8, wherein the step of demodulating the equalized data includes the use of a fast fourier transfer algorithm and the set of one or more coefficients is selected to compensate for round off errors attributable to the use of the finite precision arithmetic to implement the fast fourier transfer algorithm.

10. (CURRENTLY AMENDED) The method as recited in ~~Claim 2,~~ Claim 4, wherein the step of equalizing the received data includes processing the received data using a finite impulse response (FIR) filter.

11. (PREVIOUSLY PRESENTED) The method as recited in Claim 10, wherein the received data is modulated using discrete multitone modulation and a set of one or more (FIR) coefficients for the finite impulse response filter is selected to maximize, in the equalizer, the numbers of bits used to represent each discrete multitone symbol.

12. (CURRENTLY AMENDED) The method as recited in ~~Claim 2,~~ Claim 4, wherein the method further comprises processing the received data using an analog-to-digital converter and the set of one or more coefficients is further selected to account for quantization noise in the analog-to-digital converter.

13. (CURRENTLY AMENDED) The method as recited in ~~Claim 2,~~ Claim 4, wherein the communications channel is a twisted pair telephone line.

14. (CANCELED).

15. (CANCELED).

16. (CURRENTLY AMENDED) A computer-readable medium carrying one or more sequences of one or more instructions for processing data received from a communications channel, wherein the processing of the one or more sequences of one or more instructions by one or more processors cause the one or more processors to perform the steps of:

receiving, from the communications channel, received data that is based upon both modulated data and distortion introduced by the communications channel, wherein the modulated data is the result of original data modulated onto one or more carriers;

equalizing the received data using an equalizer to generate equalized data, wherein the equalizer uses an algorithm with a set of one or more coefficients selected to account for a frequency domain response of the equalizer and to reduce the distortion introduced by the communications channel; and

recovering an estimate of the original data by demodulating the equalized data.

~~The computer-readable medium as recited in Claim 14, wherein the set of one or more coefficients is further selected to reduce the distortion introduced by the communications channel.~~

17. (CANCELED).

18. (CURRENTLY AMENDED) A computer-readable medium carrying one or more sequences of one or more instructions for processing data received from a communications channel, wherein the processing of the one or more sequences of one

or more instructions by one or more processors cause the one or more processors to perform the steps of:

receiving, from the communications channel, received data that is based upon both modulated data and distortion introduced by the communications channel, wherein the modulated data is the result of original data modulated onto one or more carriers;

equalizing the received data using an equalizer to generate equalized data, wherein the equalizer uses finite precision arithmetic to implement an algorithm with a set of one or more coefficients selected to account for a frequency domain response of the equalizer and to compensate for round off errors attributable to the use of the finite precision arithmetic in the equalizer; and

recovering an estimate of the original data by demodulating the equalized data.

~~The computer-readable medium as recited in Claim 14, wherein finite precision arithmetic is employed in the equalizer to implement the algorithm and the set of one or more coefficients is selected to compensate for round off errors attributable to the use of the finite precision arithmetic in the equalizer.~~

19. (PREVIOUSLY PRESENTED) The computer-readable medium as recited in Claim 18, wherein the set of one or more coefficients is determined based upon modeling noise attributable to the round off errors as a white noise source at an output of the equalizer.

20. (CURRENTLY AMENDED) A computer-readable medium carrying one or more sequences of one or more instructions for processing data received from a communications channel, wherein the processing of the one or more sequences of one or more instructions by one or more processors cause the one or more processors to perform the steps of:

receiving, from the communications channel, received data that is based upon both modulated data and distortion introduced by the communications channel,

wherein the modulated data is the result of original data modulated onto one or more carriers;

equalizing the received data using an equalizer to generate equalized data, wherein the equalizer uses finite precision arithmetic to implement an algorithm with a set of one or more coefficients selected to account for a frequency domain response of the equalizer and to compensate for round off errors attributable to the use of the finite precision arithmetic to demodulate the equalized data; and

recovering an estimate of the original data by demodulating the equalized data.

~~The computer-readable medium as recited in Claim 14, wherein the step of demodulating the equalized data includes the use of finite precision arithmetic and the set of one or more coefficients is selected to compensate for round off errors attributable to the use of the finite precision arithmetic to demodulate the equalized data.~~

21. (PREVIOUSLY PRESENTED) The computer-readable medium as recited in Claim 20, wherein the step of demodulating the equalized data includes the use of a fast fourier transfer algorithm and the set of one or more coefficients is selected to compensate for round off errors attributable to the use of the finite precision arithmetic to implement the fast fourier transfer algorithm.

22. (CURRENTLY AMENDED) The computer-readable medium as recited in ~~Claim 14,~~ Claim 16, wherein the step of equalizing the received data includes processing the received data using a finite impulse response (FIR) filter.

23. (PREVIOUSLY PRESENTED) The computer-readable medium as recited in Claim 22, wherein the received data is modulated using discrete multitone modulation and a set of one or more (FIR) coefficients for the finite impulse response filter is selected to maximize, in the equalizer, the numbers of bits used to represent each discrete multitone symbol.

24. (CURRENTLY AMENDED) The computer-readable medium as recited in ~~Claim 14,~~ Claim 16, wherein the computer-readable medium includes one or more additional instructions which, when executed by the one or more processors, cause the one or more processors to process the received data using an analog-to-digital converter and the set of one or more coefficients is further selected to account for quantization noise in the analog-to-digital converter.

25. (CURRENTLY AMENDED) The computer-readable medium as recited in ~~Claim 14,~~ Claim 16, wherein the communications channel is a twisted pair telephone line.

26. (CANCELED).

27. (CANCELED).

28. (CURRENTLY AMENDED) An apparatus for processing data received from a communications channel comprising:

an equalizer configured to equalize received data from the communications channel and generate equalized data, wherein the received data is based upon both modulated data and distortion introduced by the communications channel, and the modulated data is the result of original data modulated onto one or more carriers, and wherein the equalizer is configured to use an algorithm with a set of one or more coefficients selected to account for a frequency domain response of the equalizer and to reduce the distortion introduced by the communications channel; and

a demodulator configured to generate an estimate of the original data by demodulating the equalized data.

~~The apparatus as recited in Claim 26, wherein the set of one or more coefficients is further selected to reduce the distortion introduced by the communications channel.~~

29. (CANCELED).

30. (CURRENTLY AMENDED) An apparatus for processing data received from a communications channel comprising:

an equalizer configured to equalize received data from the communications channel and generate equalized data, wherein the received data is based upon both modulated data and distortion introduced by the communications channel, and the modulated data is the result of original data modulated onto one or more carriers, and wherein the equalizer is configured to use finite precision arithmetic to implement an algorithm with a set of one or more coefficients selected to account for a frequency domain response of the equalizer and to compensate for round off errors attributable to the use of the finite precision arithmetic in the equalizer; and

a demodulator configured to generate an estimate of the original data by demodulating the equalized data.

~~The apparatus as recited in Claim 26, wherein finite precision arithmetic is employed in the equalizer to implement the algorithm and the set of one or more coefficients is selected to compensate for round off errors attributable to the use of the finite precision arithmetic in the equalizer.~~

31. (PREVIOUSLY PRESENTED) The apparatus as recited in Claim 30, wherein the set of one or more coefficients is determined based upon modeling noise attributable to the round off errors as a white noise source at an output of the equalizer.

32. (CURRENTLY AMENDED) An apparatus for processing data received from a communications channel comprising:

an equalizer configured to equalize received data from the communications channel and generate equalized data, wherein the received data is based upon both modulated data and distortion introduced by the communications channel, and the modulated data is the result of original data modulated onto one or more carriers, and wherein the equalizer is configured to use finite precision arithmetic to implement

an algorithm with a set of one or more coefficients selected to account for a frequency domain response of the equalizer and to compensate for round off errors attributable to the use of the finite precision arithmetic to demodulate the equalized data; and

a demodulator configured to generate an estimate of the original data by demodulating the equalized data.

~~The apparatus as recited in Claim 26, wherein the demodulator is configured to process the equalized data using finite precision arithmetic and the set of one or more coefficients is selected to compensate for round off errors attributable to the use of the finite precision arithmetic to demodulate the equalized data.~~

33. (PREVIOUSLY PRESENTED) The apparatus as recited in Claim 32, wherein the demodulator is configured to process the equalized data using a fast Fourier transfer algorithm and the set of one or more coefficients is selected to compensate for round off errors attributable to the use of the finite precision arithmetic to implement the fast Fourier transfer algorithm.

34. (CURRENTLY AMENDED) The apparatus as recited in ~~Claim 26,~~ Claim 28, further comprising a finite impulse response (FIR) filter configured to process the receive data.

35. (PREVIOUSLY PRESENTED) The apparatus as recited in Claim 34, wherein the received data is modulated using discrete multitone modulation and a set of one or more (FIR) coefficients for the FIR filter is selected to maximize the number of bits used to represent each discrete multitone symbol in the equalizer.

36. (CURRENTLY AMENDED) The apparatus as recited in ~~Claim 26,~~ Claim 28, further comprising an analog-to-digital converter configured to process the received data and the set of one or more coefficients is further selected to account for quantization noise in the analog-to-digital converter.

37. (CURRENTLY AMENDED) The apparatus as recited in ~~Claim 26,~~ Claim 28, further comprising a coefficient generator for generating the set of one or more coefficients.

38. (CURRENTLY AMENDED) The apparatus as recited in ~~Claim 26,~~ Claim 28, wherein the communications channel is one or more twisted pair telephone lines.

39 - 41. (CANCELED)